UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 July 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-32</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-32</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>07/06/2004</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities: there is a

space missing between the words *"radio communication" and "herein above"*.

Appropriate correction is required.

Claim Objections

2.   Claim 22 objected to because of the following informalities: The word *"the"* is

repeated twice. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-7, 11-17, 22-32 rejected under 35 U.S.C. 102(b) as being anticipated by

Bottomley et al WO 01/29982 A1.

5.   With respect to claims 1 and 11, Bottomley discloses a method of signal

processing for a spread spectrum digital radio communication receiver, comprising the

following steps:

6.   – determine a propagation profile (correlation metrics) of a propagation channel

(multipath components) between sending means and the receiver, including at least one

propagation path associated with a reception energy; (Page 4 lines 5-8)

7.   –measure data relating to an energy distribution (signal strength) in the

propagation profile (correlation metrics); (Page 4 line 7)

8.   –estimate information symbols (pilot symbols or recovered data symbols; page

10 lines 25-27) carried by a signal received originating from means of sending over the

propagation channel, by applying to said signal a processing taking into account a

predetermined maximum number (threshold; Page 26 lines 14-26) of propagation paths,

said propagation paths (multipath components) taken into account being chosen

according to a criterion (selection strategies; page 14 lines 10-15) selected from several

criteria (absolute or relative measures of signal power or signal to noise ratio), (Page 4

lines 10-15;

in which said criterion is selected as a function of the measured data relating to the

energy distribution (signal strength) in the propagation profile. (see also Figures 4 and

5)

9.   With respect to claims 2,12 and 23, Bottomley discloses, method according to

Claim 1, in which the step of determining a propagation profile of a propagation channel

between sending means and the receiver comprises, a processing applied to the signal

received first signal) identifying, on the basis of an analysis of an impulse response of

the propagation channel between the sending means and the receiver, a number of

propagation paths (multipath components) detected and respective reception energies

(respective signal strengths) for these paths. (Page 4 lines 22-30; see also Figure 4)

10.   With respect to claims 3,13 and 24, Bottomley discloses, method propagation

according to Claim 1, in paths taken into account which said are chosen according to a

criterion selected from a set comprising a first criterion (desired signal collecting

correlation times) according to which the predetermined maximum number of

propagation paths (respective first correlation outputs) of greatest energy (respective

signal strengths) on average are taken into account, and a second criterion

(interference collecting correlation time) according to which the predetermined

maximum number of propagation paths of largest instantaneous energy (signal

strengths for the first correlation outputs) are taken into account.(Page 5 lines 1-10; see

also Figure 5)

11.   As to claims 4 ,14 and 25, Bottomley discloses a method (signal strength

determiner) in which the measured data relating to the energy distribution (signal

strength) in the propagation profile comprise a measurement of energy dispersion for

the propagation paths detected. (Pg. 6 lines 4-6, Pg. 5 lines 26-32; Figure 5)

12.   As to claim 5, 15 and 26, Bottomley discloses a method in which the selection of

said criterion as a function of the measured data relating to the energy distribution in the

propagation profile comprises a comparison of said measurement of energy dispersion

for the propagation paths detected with a threshold. (Figs 13a,b; page 19 lines 16-30)

13.   As to claims 6, 16 and 27, Bottomley discloses a method in which said threshold

is obtained in relation to a prior choice of a gap in performance between two strategies

for choosing propagation paths taken into account in said processing according to
respective criteria. (Figures 5,6 ; page 12 lines 18-27, page 14 lines 1016, page 15 lines
1-10)

14.   As to claims 7, 17 and 28, Bottomley discloses a method in which the obtaining
of the threshold is done on the basis of correspondences between an energy dispersion
in a propagation profile and a gap in performance between two strategies for choosing
propagation paths according to respective criteria, the correspondences being pre-
established under various radio conditions (Figure 5, Page 27 lines 1-31, Page 28lines
1-32; Figures 16 a, b)

15.   As to claim 18 Bottomley discloses a receiver in which the means for selecting a
criterion for choosing from several criteria as a function of the measured data relating to
the energy distribution in the propagation profile are designed to obtain the threshold on
the basis of the correspondences stored in the means ~ for storing correspondences
between an energy dispersion in a propagation profile and a gap in performance
between two strategies for choosing the propagation paths according to respective
criteria. (Figures 4,5,6.14 a, b, 15a, b; Page 22 lines19-30, Page 23 lines 1-32, Page24
lines 1-30)

       With respect to claims 22 and 32 Bottomley discloses a computer programme,
loadable associated with a processor, into a memory and comprising:
instructions for the implementation (page 29 lines 7-19) during the execution of said
programme by the processor (page 29 lines 19-26, and 3-7) of the followings steps :

- determine a propagation profile (correlation metrics) of a propagation channel (multipath components) between sending means and the receiver, including at least one propagation path associated with a reception energy; (Page 4 lines 5-8)

- measure data relating to an energy distribution (signal strength) in the propagation profile (correlation metrics); (Page 4 line 7)

- estimate information symbols (pilot symbols or recovered data symbols; page 10 lines 25-27) carried by a signal received originating from means of sending over the propagation channel, by applying to the said signal a processing taking into account a predetermined maximum number (threshold; Page 26 lines 14-26) of propagation paths, the said propagation paths taken into account being chosen according to a criterion (selection strategies; page 14 lines10-15) selected from several criteria (absolute or relative measures of signal power or signal to noise ratio), (Page 4 lines 10-15)

in which said criterion is selected as a function of the measured data relating to the energy distribution (signal strength) in the propagation profile (correlation metrics) (see also Figures 4 and 5)

16.   Claims 8-10,19- 21, and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Proakis, Digital Communications Third Edition, Chapter 14.

17.   As to claims 8, 19 and 29, Proakis discloses a method, in which the measurement of energy dispersion for the propagation paths detected comprises an estimation of a mean energy gap between the propagation paths detected (Page 786 paragrapghs 2-4, Page 788 paragraph 1, page 789 paragrapghs 1-4)

18.   As to claims 9, 20 and 30, Proakis discloses a method, in which the mean energy

gap between the propagation paths detected is estimated in the least squares sense

(page 801 paragraphs 1-2)

19.   As to claims 10, 21 and 31, Proakis discloses a method, in which the mean

energy gap between the propagation paths detected is estimated according to an

arithmetic mean of ratios between the energies of consecutive paths from among the

propagation paths detected (Figure 14-5-6, Figure 14-5-7; page 804 paragraph 1-page

806 paragraph 3)

MOHAMMED GHAYOUR

SUPERVISORY PATENT EXAMINER